STATE OF KUBERNETES IN 2020

As more and more businesses begin to utilize [Kubernetes](#), many have questions about the current state of Kubernetes, the benefits and challenges that come with it, and what to expect next. With that in mind, two major surveys were conducted to comprehensively evaluate Kubernetes usage, looking at, among other things, volume, benefits, challenges, deployment, and what's next.

The overview of the data shows some clear trends, namely increased usage, increased volume, and some clear organizational benefits. Looking more deeply at these surveys, including some expert analysis from industry leaders, can help both businesses that are currently utilizing Kubernetes as well as those considering making the shift.

VMWare's State of Kubernetes Survey

VMWare's 2020 State of Kubernetes survey was completed by 247 individuals for organizations that all have at least 1,000 employees. Fifty percent of individuals surveyed were from organizations with 5,000 or more employees and 35% were from organizations with at least 1,000 *developers.* As a result, it's important to appreciate that this survey was focused on large enterprises, providing a glimpse of Kubernetes usage in major corporations. It also was primarily focused on North America, with nearly 70% of respondents being from North American businesses.

According to Michael Cote from VMWare, the prevailing sentiment in the wake of this survey is that "Kubernetes has won." Supporting that overarching takeaway is survey data showing that 59% of the organizations surveyed are currently using Kubernetes in production. Additionally, the survey found

that 20% of organizations using Kubernetes have 50 or more clusters, up from 18% in 2018.

Kubernetes Benefits for Enterprises

Notably, the data also shows that the increased usage and volume is for good reason, as organizations report that Kubernetes offers a number of benefits to organizations. A few key takeaways from the survey include:

- 56% of respondents using Kubernetes saw improved resource utilization
- 53% saw shortened development cycles with Kubernetes
- 50% found that it helped to containerize monolithic apps
- 42% said that it enabled the organization to move to the cloud
- 33% found that it reduced public cloud costs

Perhaps as significant as the benefits reported is the fact that only 5% of respondents using Kubernetes found that their organization is seeing no benefits from its use.

While it's important to note that usage and volume from across organizations and industries are up, it's as important, if not more important, to see that businesses are seeing benefits from using Kubernetes. With an ability to reduce the time of development cycles while also improving resource utilization, it can help teams to more quickly and effectively deploy new software, which is key to being an industry leader during the digital transformation.

Where Kubernetes is Deployed

Another interesting takeaway from this survey is where enterprises are deploying Kubernetes. It's important to recognize that most organizations are not simply running it in one location, but instead run it on-premises and across all clouds. Here are some specifics on where it's currently deployed by enterprises:

- 64% of respondents deploy Kubernetes on-premises
- 42% run it with a single, public cloud vendor
- 31% utilize multiple public cloud vendors
- 10% use distributed edge locations

Challenges with Kubernetes

While Kubernetes has some clear benefits, it's important for organizations considering using this software to anticipate and plan for some of the challenges associated with it. The biggest noted challenge was a lack of experience and expertise working with the platform. To combat this issue, analysts suggest finding people that can help with deployment and management and working to utilize their expertise from the outset.

Another common challenge that emerged from this data is difficulty with adoption and implementation due to internal alignment issues. The data surrounding internal perceptions about the biggest impediments associated with Kubernetes help to highlight alignment issues. Notably, 46% of executives saw integrating new technology into existing systems as the biggest impediment; whereas 29% of developers found that waiting for central IT to provide necessary access as the biggest impediment. In contrast, only 6% of executives found this to be the primary impediment.

Some internal alignment issues are to be expected as part of any major technology shift, yet it's important for organizations to anticipate and address this issue. Ultimately, experts advise that to most effectively utilize Kubernetes, organizations should listen to, understand, and prioritize the needs of developers.

The Cloud Native Computing Foundation's Kubernetes Survey

While VMWare's survey provides some key insights, it's only focused on large corporations, 68% of which are in North America. To provide a more comprehensive picture of Kubernetes usage globally and across businesses of all sizes, it's helpful to also look at a recent survey by the Cloud Native Computing Foundation (CNCF). This survey had 1,337 responses, with only 37% of respondents being from North America and only 44% of respondents from organizations with more than 1,000 employees.

Despite different demographics, the key takeaway from this survey is similar to that of the State of Kubernetes, namely, there is increasing usage of Kubernetes, particularly in production environments. Results from the 2016 CNCF survey found 23% of respondents using Kubernetes, whereas the 2019 survey reports 84% of businesses using it.

Not only is there increased usage, but there is increased volume. In the 2018 survey, 56% of users had less than 250 containers, yet in 2019, 56% had more than 250 containers, with almost 20% running 5,000 or more.

Unlike the larger enterprises that prefer to host on-premises, 62% of respondents to the CNCF survey report deploying Kubernetes in a public cloud. Interestingly, this number is down from 77% in 2018, likely as a result of the hybrid cloud option.

Benefits and Challenges

Respondents to the CNCF survey weighed the benefits of Kubernetes slightly differently than the larger enterprises in the VMWare survey did. The key benefits reported in the CNCF survey were faster deployment, improved scalability and availability, and more cloud portability.

Many of the same challenges were reported, as culture challenges were also sighted as a primary impediment to Kubernetes deployment and usage. And, a lack of training, which parallels well with the response of lack of expertise and experience sighted in the VMWare survey, was also reported as a major challenge. Respondents to the CNCF survey, however, also reported security concerns and overall complexity as major challenges of Kubernetes.

Conclusion

Despite some differences between them, these two surveys help to paint a clear picture of the current state of Kubernetes. While it is not without its challenges, most organizations find that the benefits outweigh the costs and that using Kubernetes provides some substantial and tangible benefits for their organization. Amidst the current digital transformation, organizations are desperately working to develop new, useful software that can be more quickly and efficiently deployed. These surveys indicate that Kubernetes is helping to make this possible by shortening development times and leading to faster deployment.

Experts suggest now may be the time to make the shift to Kubernetes if you haven't already. While

this will likely lead to some internal battles and a period of transition, the experts and the data indicate that it may be worth the growth pains and short-term struggles.